

REMARKS

Reconsideration of the instant application is respectfully requested. The present submission is responsive to the Office Action of November 2, 2006, in which claims 1-7 and 9-20 are presently pending. A courtesy copy of the same is provided above. Claims 1, 4-12 and 14-20 have now have been rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter.

With regard to the art of record, claims 1-5, 10 and 11 remain rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 6,225,011 to Gotoh, et al., in view of U.S. Patent 6,347,291 to Berman. Claims 6, 9, 12-16 and 18-20 remain rejected under U.S.C. §103(a) as being unpatentable over Gotoh, in view of Berman, and further in view of U.S. Patent 6,801,825 to Utsonomyia.

In addition, claim 7 is now rejected under U.S.C. §103(a) as being unpatentable over Gotoh, in view of Berman, and further in view of U.S. Patent 4,327,292 to Wang, et al. Finally, claim 17 is now rejected under U.S.C. §103(a) as being unpatentable over Gotoh, in view of Berman and Utsonomyia, and further in view of Wang. For the following reasons, it is respectfully submitted that the application is now in condition for allowance.

§101 rejections

Turning first to the §101 rejections, the Applicant respectfully traverses the same for the reason that the Examiner has failed to properly establish, on the record, a prima facie case that the claims are directed to non-statutory subject matter under 35 U.S.C. §101 and under the “Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility”, OG Notice 22 November 2005.

In support of the §101 rejections, the Examiner relies on section (IV)(C)(2)(b) of the guidelines, which relate to determining whether the claimed invention is a practical application that produces a useful, concrete, and tangible result. Particularly, the Examiner relies on the guideline provision that the focus (in determining whether the claim is for a “practical application”) is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather the final result achieved by the claimed invention is “useful, tangible, and concrete. The Applicant notes that the guidelines offer no further direction or definition as to what the “final result” achieved by a claimed invention is.

However, as best understood from the Examiner’s statement on page 2 of the Office Action in regard to claim 1 and claim 12, it would appear that the Examiner has construed the “final result achieved by the claimed invention” as being equivalent to the last listed element of the claim. In other words, the last element of claim 1 reads “determining substrate position relative to the exposure system from alignment data of at least the first and second scanned areas”, while the last element of claim 12 reads “locating a third point of interest in a third segment based on the periodicity.” It is these specific claim elements that the Examiner indicates are “abstractions without a tangible result.”

In the first place, the Applicant respectfully submits that there is no legal basis for construing the “final result” of a claimed invention simply to be the last recited step of the claim. Such an interpretation improperly restricts the scope of a claim in general by reading into the claim a specific sequence in which operations are performed. However, even where the last listed element of a claim does in fact correspond to the last performed step in a series of claim steps, there is still no basis for equating the last recited claim element to a “final result.” The Applicant submits that such an interpretation actually contradicts the instruction of the guidelines, because it focuses on a particular step (i.e., the last step), and not the final result.

In addition to the specific provisions cited by the Examiner, the Interim Guidelines also provide the following:

“D. Establish on the Record a Prima Facie Case

The examiner should review the totality of the evidence (e.g., the specification, claims, relevant prior art) before reaching a conclusion with regard to whether the claimed invention sets forth patent eligible subject matter. The examiner must weigh the determinations made above to reach a conclusion as to whether it is more likely than not that the *claimed invention as a whole* either falls outside of one of the enumerated statutory classes or within one of the exceptions to statutory subject matter. "The examiner bears the initial burden . . . of presenting a prima facie case of unpatentability." *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If the record as a whole suggests that it is more likely than not that the claimed invention would be considered a practical application of an abstract idea, natural phenomenon, or law of nature, the examiner should not reject the claim.

After the examiner *identifies and explains in the record the basis for why a claim is for an abstract idea with no practical application*, then the burden shifts to the applicant to either amend the claim or make a showing of why the claim is eligible for patent protection. See, e.g., *In re Brana*, 51 F.3d 1560, 1566, 34 USPQ2d 1436, 1441 (Fed. Cir. 1995); see generally MPEP Sec. 2107 (Utility Guidelines)." (Emphasis added)

The Applicants respectfully submit that consideration of the "claimed invention as a whole" would also include the claim preamble language, which, in the case of claims 1 and 12, recite methods of aligning a substrate to an exposure system and aligning a patterned substrate having a plurality of segments and measuring the same. This being the case, a proper application of a §101 rejection to the instant claims would have to establish that aligning a substrate to an exposure system and aligning a patterned substrate

having a plurality of segments and measuring the same are not tangible results. Such a determination has not been made in the present Office Action.

Notwithstanding the above, even if the Examiner has properly construed the “final result” of the pending claims, the guideline section “D” cited above still requires the Examiner to identify and explain in the record the basis for why the claim is for an abstract idea with no practical application. Only then does the burden of showing why the claim is eligible for patent protection shift to the applicant. The Examiner has not done so in the instant Office Action. All that is provided in the present Office Action is a conclusory statement that “...the step of determining substrate position and...the step of locating a third point of interest are abstractions without a tangible result.” In other words, the Examiner has not provided analysis or argument as to why that is the case.

The language provided in 2, paragraph 3 of the Office Action discussing “[m]erely ‘solving a system of equations’ would not appear sufficient to constitute a tangible result, since the outcome of the ‘solving’ has not been used in a disclosed practical application nor made available in such a manner that its usefulness in a disclosed application can be realized” does not support the Examiner’s conclusion that the final result of the claims is abstract because the pending claims do not recite “solving a system of equations,” nor is solving equations the final result of the claims. On the contrary, the location of a substrate position is a “real-world” result, because this information is needed for proper semiconductor device manufacturing, in terms of wafer alignment and patterning.

Accordingly, because the Examiner has not correctly applied the Subject Matter Eligibility guidelines from the perspective of determining the “final result” achieved by the claimed invention, and because the Examiner has also failed to establish on the record a *prima facie* case of why the claims are abstract, the rejections of the claims based on §101 are improper. It is therefore respectfully requested that the same be withdrawn.

§103 rejections

In the amendment filed on August 21, 2006, the Applicant argued the following with respect to Gotoh:

“[A] review of the cited portions of the Gotoh reference (col. 2, lines 10-15, 20-25; Figures 5A, 5B) reveals that the teachings therein are directed toward correction of distortion of a pattern exposed by an optical exposure system, as opposed to automatic alignment of a wafer during semiconductor fabrication. More significantly, it will be seen that the “first point of interest” 8 from Figure 5A is actually a distortion measurement mark that is formed on a lithography mask 6, not a semiconductor wafer. In contrast, distortion measurement mark 8a is printed on the semiconductor wafer 1 in Figure 5B, using the mask of Figure 5A. Therefore, what is actually taught in Gotoh is a means of determining the degree of image distortion produced by an optical exposure system by comparing the position data of the actual printed distortion marks 8a on the wafer 1 with the fabricated distortion marks 8 on the mask 6.

Because a lithography mask is a totally separate object with respect to a semiconductor wafer, locating points of interest on two different objects does not meet (among other aspects) the claimed limitation of locating first and second points of interest on a patterned substrate. Therefore, because neither Gotoh nor any of the other reference[s] of record teach each and every element of the pending claims, the claims are not rendered obvious by the same.”

In the present Office Action, the Examiner has now cited an additional portion of the Gotoh reference (i.e., Fig. 2, col. 1, lines 40-55) in maintaining the §103 rejections. In addition, the Examiner now indicates that Gotoh does not “explicitly state” determining substrate position relative to the exposure system from alignment data of at least the first and second scanned areas in the embodiments of Fig. 5a and Fig. 5b, but “suggests it” in column 2, lines 25-30. This portion of Gotoh reads as follows:

“Then, mark position data is memorized by scanning the positions of the distortion measurement marks 8a formed on this wafer 1 with electron beams, exposure distortion data is obtained from that stored data, and the exposure positions of charged beams are corrected in accordance with distortion data. That is, there is used the above-mentioned latter method.”

The Applicant is unable to discern what in this cited portion of Gotoh “suggests” locating first and second points of interest on a patterned substrate. Again, this portion of the teachings of Gotoh deals with determining the degree of image distortion produced by an optical exposure system by comparing the position data of the actual printed distortion marks on a wafer with the fabricated distortion marks on a mask.

The Examiner further relies on Gotoh’s teaching in Figure 2 (i.e., that there are at least four alignment marks at the four corners of the chip to determine substrate position). However, even relying on this additional subject matter, there is still no teaching or suggestion of applying a technique in which alignment is achieved by: scanning a second area proximate the second point of interest for a second unique feature corresponding to the first unique feature, wherein the first unique feature is saved as an alignment image for use in locating the second unique feature in the second area; gathering alignment data from at least scanning the first and second areas; and determining substrate position relative to the exposure system from alignment data of at least the first and second scanned areas.

Simply because Gotoh shows, in Fig.2, a wafer having multiple regions of alignment marks does not mean that this teaches or suggests the claimed relationship between using a first unique feature from a first point of interest and scanning a second area for a second unique feature corresponding to the first unique feature. There is nothing that teaches or suggests this in col. 1, lines 40-55 of Gotoh. Further there is no teaching in Gotoh that ties the description of the Figure 5 embodiment with the Figure 2

illustration. Again, Figure 5 in Gotoh relates to correction of optical distortion. (Col. 2, lines 8-18).

Accordingly, because the Applicant maintains that the combination of each of the cited references does not teach or suggest each element of the pending claims, the claims are not obvious over the references, and the Applicant therefore respectfully traverses each of the outstanding §103 rejections.

For the above stated reasons, it is respectfully submitted that the present application is now in condition for allowance. No new matter has been entered and no additional fees are believed to be required. However, if any fees are due with respect to this Amendment, please charge them to Deposit Account No. 09-0458 maintained by Applicant's attorneys.

Respectfully submitted,
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